OLYMPUS®

Macro Flash System / Makro-Blitz-System
Systèm de flash gros plan / Sistema de flash macro

DIGITAL

Macro Flash Controller FC-1
Ring Flash RF-11 / Twin Flash TF-22
Makro-Blitz-Steuerung FC-1
Ringblitz RF-11 / Zweifachblitz TF-22
Contrôleur de flash en gros plan FC-1
Flash annulaire RF-11 / Flashes jumeaux TF-22
Controlador de flash para macro FC-1
Flash de anillo RF-11 / Flash doble TF-22

EN Instructions

Thank you for purchasing the OLYMPUS Macro Flash System. Before use, please read this instruction manual to ensure your safety, and keep it handy for future reference.

SAFETY PRECAUTIONS (Be sure to read and observe the following.)

This instruction manual uses a variety of common symbols and icons to assist you in proper handling and usage of this product, and to warn you of potential hazards to yourself and others as well as to property. These symbols and their significance are described below.

⚠ DANGER	⚠ WARNING	⚠ CAUTION
Failure to observe the precautions indicated by this symbol may result in serious injury or death.	Failure to observe the precautions indicated by this symbol may result in injury or death.	Failure to observe the precautions indicated by this symbol may result in injury or property damage.

Symbols for prohibiting action	Symbol instructing action
Prohibited / Disassembly prohibited	Mandatory

For customers in Europe

The "CE" mark indicates that this product complies with the European requirements for safety, health, environment and customer protection. CE-mark products are for sale in Europe.

For customers in USA

FCC Notice

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any unauthorized changes or modifications to this equipment would void the user's authority to operate.

For customers in CANADA

This Class B digital apparatus complies with Canadian ICES-003.

■ This Macro Flash System has been designed exclusively for use with Olympus digital cameras. Do not connect the Macro Flash System to a camera not manufactured by Olympus, as this may result in a malfunction or damage to the camera and/or Macro Flash System.

⚠ DANGER

■ The Macro Flash System incorporates high-voltage circuitry. Never attempt to disassemble or modify it, as this may result in electric shock and/or injury.

■ Do not touch the ring flash connector or twin flash connector terminals on the FC-1 Macro Flash Controller.

■ Do not use the Macro Flash System where it may be exposed to flammable or explosive gas. Otherwise, fire ignition or explosion may result.

■ To prevent a traffic accident, do not direct the flash towards the driver of a car.

⚠WARNING

- Do not fire the flash or AF illuminator light immediately in front of a person's eyes (particularly an infant). Exposure to the light from the flash at a very short range may cause irreparable injury to the eyes. Be especially careful to avoid using the Macro Flash System at a distance of less than 1 meter from an infant.

- Do not leave the Macro Flash System and batteries within reach of children.
  - If a child swallows a battery or small accessory, see a doctor immediately.
  - If the flash is emitted near a child, their eyes may be injured irreparably.
  - Moving parts of the Macro Flash System could injure a child.

- Avoid the following actions to prevent fire or injury due to battery fluid leak, overheating, fire ignition or bursting.
  - Do not use batteries that are not specified for use with this Macro Flash System.
  - Do not throw the battery in a fire, expose it to heat, short-circuit it, or disassemble it.
  - Do not mix old and new batteries, or batteries of different types or brands.
  - Do not attempt to recharge non-rechargeable batteries such as alkaline batteries.
  - Do not load batteries with the +/– polarity reversed.

- Do not store the Macro Flash System in a place exposed to excessive dust or moisture. Otherwise, fire or electric shock may result.

- Do not use the flash when it is covered by a flammable object such as a handkerchief.
  Do not touch the light-emitting area after use. It will be very hot and could burn you.

- If the Macro Flash System is dropped in water or any fluid gets inside, immediately remove the batteries and contact your dealer or Olympus. Continued use could result in fire or electric shock.

⚠CAUTION

- If you notice any abnormalities such as leakage, discoloration, deformation, overheating, or odor, stop using this device. Continued use could result in fire, overheating or explosion. Remove the batteries carefully to avoid burning yourself and to prevent exposure to gas or dangerous fluids that may be released. For repair, contact Olympus.

- Always remove the batteries when you don't expect to use the Macro Flash System for a long period. Otherwise, heat generation or fluid leak from the batteries may result in fire, injury and/or contamination of the surroundings.

- Do not use a leaking battery. Doing so could result in fire or electric shock. Please contact your dealer or Olympus.

- Do not handle the Macro Flash System with wet hands. Doing so could result in electric shock.

- Do not leave the Macro Flash System in a place where it may be exposed to high temperatures. Otherwise, deterioration of parts or fire may result.

- Do not take out the batteries immediately after using the Macro Flash System continuously for a long period. Otherwise, the hot batteries may cause burns.

- Do not deform the battery compartment or allow any foreign objects to get inside.

HANDLING PRECAUTIONS

■ The Macro Flash System is composed of precision electronic parts. Absolutely avoid using or storing the Macro Flash System in the following places, as this may result in malfunction or failure.
- Under direct sunlight, on a beach, etc.
- Anywhere exposed to high temperature and humidity or rapid fluctuations in temperature and humidity.
- Any place exposed to excessive sand, dust or dirt.
- Near a fire.
- Near an air conditioner or air humidifier.
- Any place exposed to water or moisture.
- Any place subject to vibrations.
- Inside an automobile.

■ Do not apply a strong vibration or shock to the Macro Flash System by dropping it or hitting it against something.

■ When the Macro Flash System has not been used for a long period, mold or moss may form. This can cause a malfunction. To prevent this, it is recommended to check the operations before using the Macro Flash System after a long period of storage.

■ Do not touch the electric contacts of the Macro Flash System to prevent malfunction.

■ To prevent overheating and deterioration of the light-emitting section, do not continue full activation more than 40 times in a row. After firing the flash 40 times successively, do not use the flash for at least 10 minutes to allow the light-emitting section to cool down.

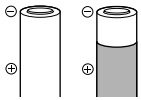
BATTERY PRECAUTIONS

■ Use only the specified batteries.
- AA (R6) alkaline dry cell batteries (LR6 type) ..... x 4
- AA (R6) Ni-Cd batteries ..... x 4
- AA (R6) Ni-Mh batteries ..... x 4
- AA (R6) Ni-Mn batteries (ZR6 type) ..... x 4
- AA (R6) lithium batteries (FR6 type) ..... x 4
- Lithium battery packs (CR-V3 type) (Olympus LB-01) ..... x 2

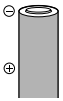
* AA (R6) manganese batteries cannot be used.

■ Be sure to observe the following points. Otherwise, battery fluid leak, overheating, fire ignition and/or bursting may result.
- Do not mix old and new batteries, recharged and discharged batteries, batteries of different capacities, or batteries of different types or brands.
- Do not attempt to recharge non-rechargeable batteries such as alkaline batteries.
- Do not load or use the batteries with the +/– polarity reversed. If the batteries do not fit smoothly in the battery compartment, do not force them.
- Never use a battery if its outer coating (insulation) has been partially or entirely peeled off. Otherwise, leakage, overheating or explosion may result.
- Some brand-new batteries may also have their outer coating (insulation) peeled off completely or partially. Never use these batteries.

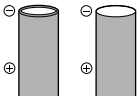
■ Do not use the following kinds of batteries.



Outer coating (insulation) is peeling or has peeled off.



The negative end is slightly swollen and is not covered by the coating (insulation).



The negative end is flat (whether or not a part of the negative pole is covered by the coating).

■ All rechargeable batteries must be recharged using the specified battery charger, simultaneously and completely. Be sure to read the battery and battery charger instruction manual.

■ Improper use of batteries may result in fluid leak, heat generation and/or damage. Sweat and oil smudges may cause battery contact failure. To prevent this, remove any stain completely with a dry cloth and insert the batteries by observing the +/– polarity.

■ In general, battery performance will be temporarily reduced as the ambient temperature drops. When using batteries in a cold place, keep them warm by keeping the Macro Flash System in cold protection gear or clothing.

■ If battery fluid gets on your skin or clothes, it may irritate your skin. Immediately rinse your skin or clothes with clean water.

■ If battery fluid comes in contact with your eyes, blindness may result. Rinse your eyes with clean water without rubbing them and see a doctor immediately.

■ Do not apply a strong shock to a battery or throw it.

■ When traveling, it is a good idea to carry spare batteries with you. In some countries, it may be difficult to obtain certain batteries.

■ Do not immerse batteries in water or moisten the terminals at its both ends.

■ If the +/– terminals of a battery are stained with sweat or oil smudges, contact failure may result. Clean the terminals well with a dry cloth before using the batteries.

■ Do not throw a battery in fire or heat it.

■ When disposing of batteries, be sure to follow local regulations.

■ When disposing of a rechargeable battery, insulate the +/– terminals with pieces of tape and take them to your nearest rechargeable battery recycling center.

Note on the cameras used with the Macro Flash System

● The functions available from the Macro Flash System are limited with certain digital cameras. For details, please check the Olympus website (http://www.olympusamerica.com/E1).

Before reading this manual

○ The information in this manual may be subject to change without notice.
○ This manual has been compiled as carefully as possible. However, if you have any questions or wish to report an error or omission, please contact Olympus.
○ Duplication of this manual in part or in whole without permission of Olympus is prohibited except for personal use. Reproduction of the contents of this manual without permission of Olympus is strictly prohibited.
○ Olympus will not assume any liability for damages, loss of profit or claims from any third party incurred due to improper use of this product.
○ Olympus will not assume any liability for damages and loss of profit related to the loss of image data due to a failure of this product, servicing by a third party not designated by Olympus, or any other reason.
○ Note that the quality of pictures shot with this product differs from the quality of pictures taken with ordinary film-based cameras.

Trademark information

All brand names and product names mentioned in this manual are the trademarks or registered trademarks of their respective owners.

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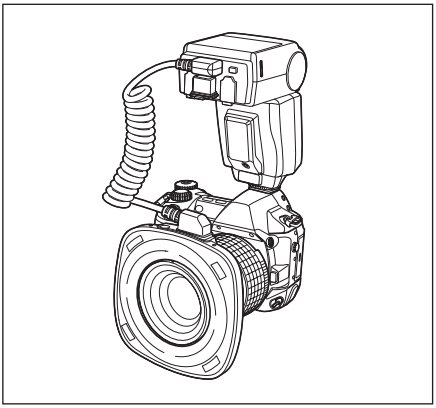
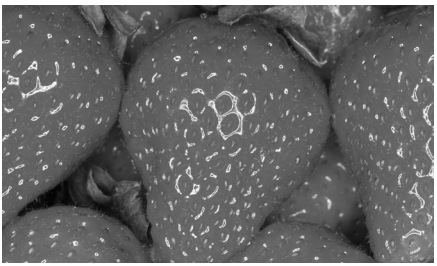
MACRO FLASH SYSTEM

● Ring Flash RF-11 (P.15)

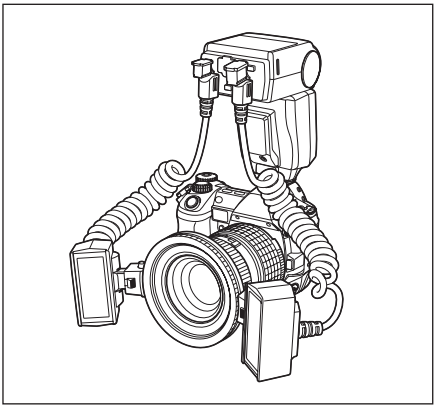
This flash makes it possible to shoot a small subject without putting a shadow on it. It also makes possible various shooting techniques not available with ordinary flashes, such as close-up shooting in a hole.





● Twin Flash TF-22 (P.27)

This flash employs two flash lamps and allows more versatile flash activation for macro shooting. For example, you can enhance shading and depth by varying the firing angles, positions and Twin Flash light ratio of the two flash lamps. You can also use just one of the two flash lamps.



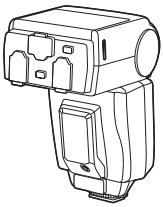
- The RF-11 Ring Flash and TF-22 must be connected to the FC-1 Macro Flash Controller for use.
- When an Olympus Four Thirds System digital SLR camera is used, the TTL AUTO mode can be used to optimize exposure.
- The RF-11 Ring Flash and TF-22 Twin Flash cannot be used simultaneously.

CHECKING THE PACKAGE CONTENTS

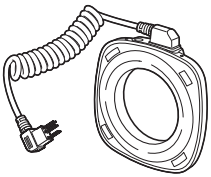
Check that all of the parts and accessories shown in the following table are included in the package. If any item is missing or damaged, contact your dealer.

Products / Items	Products Available as Sets		Products Available Individually	
	Ring Flash Set SRF-11	Twin Flash Set STF-22	Ring Flash RF-11	Twin Flash TF-22
Macro Flash Controller FC-1	○	○		
Ring Flash RF-11	○		○	
Twin Flash TF-22		○		○
Shoe Ring SR-1		○		○
Diffuser FDT-1		○		○
Macro Flash Case	○	○		
Instructions (This manual)	○	○		

- Items marked ○ are provided with each product.
- This instruction manual applies to the SRF-11 and STF-22.

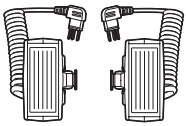


• Macro Flash Controller FC-1

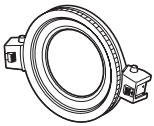


• Ring Flash RF-11

• Macro Flash Case



• Twin Flash TF-22



• Shoe Ring SR-1

• Diffuser FDT-1

APPLICABLE CAMERAS AND LENSES

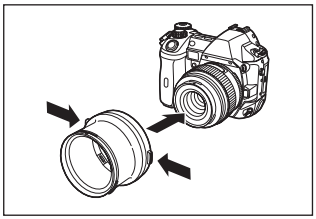
■Olympus Four Thirds System Digital SLR Camera E-1

The Macro Flash System can be combined with this camera together with one of the Zuiko digital lenses marked with ○ in the following table.

○: Applicable. ×: Not applicable.

Zuiko digital lens	Ring Flash RF-11	Twin Flash TF-22	Remark
ZUIKO DIGITAL ED50mm f2 Macro	*○	*○	*: The optional FR-1 Flash Adapter Ring is required.
ZUIKO DIGITAL 11-22mm f2.8-3.5	×	○	
ZUIKO DIGITAL 14-54mm f2.8-3.5	○	○	
ZUIKO DIGITAL ED50-200mm f2.8-3.5	○	○	
ZUIKO DIGITAL ED300mm f2.8	×	×	

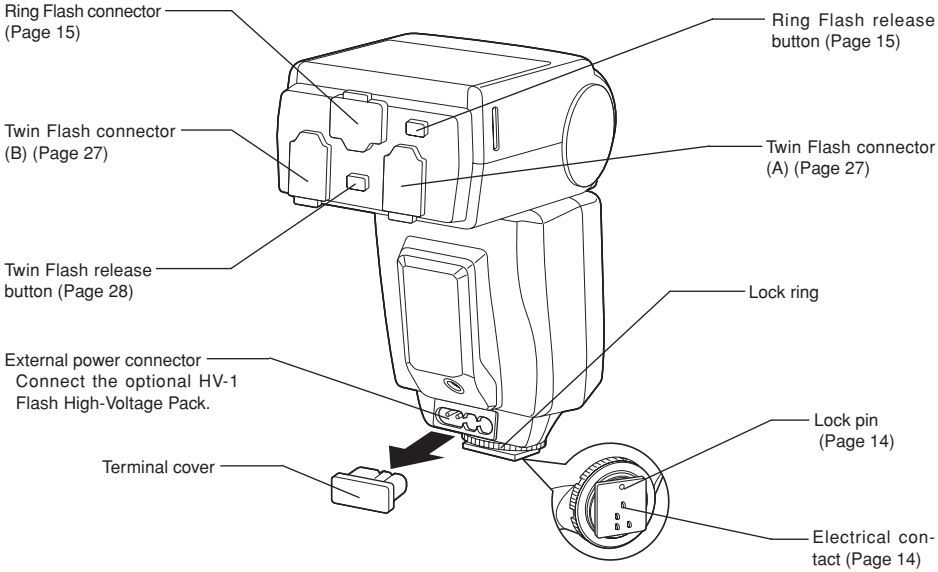
* How to use the FR-1 Flash Adapter Ring

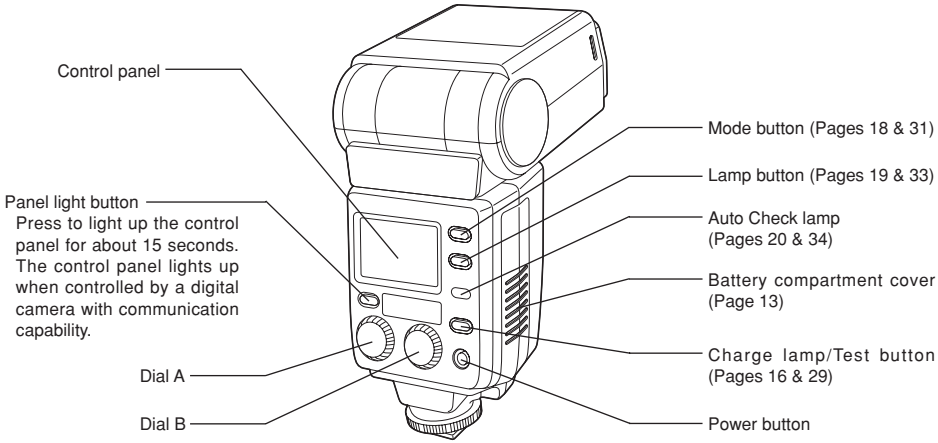


For information on combining these flashes with upcoming Olympus digital cameras and lenses, check the Olympus website or contact Olympus Customer Support Center.

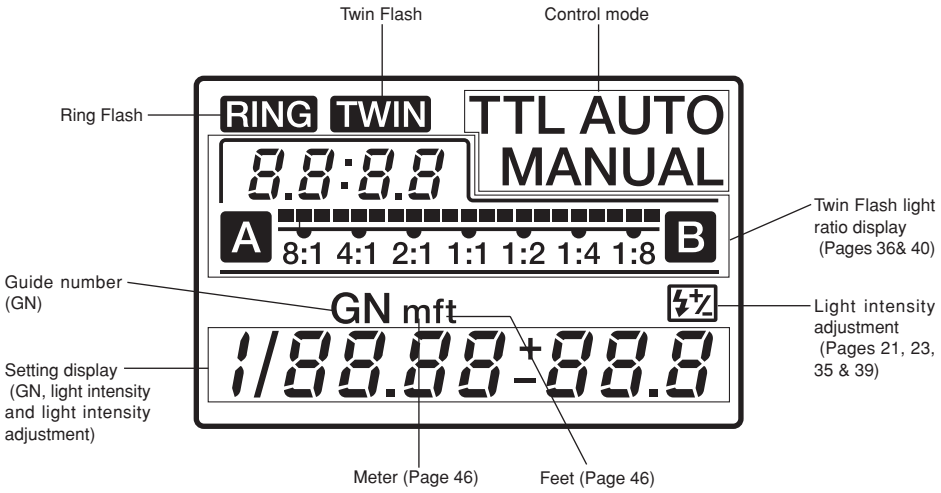
NOMENCLATURE

●Macro Flash Controller FC-1



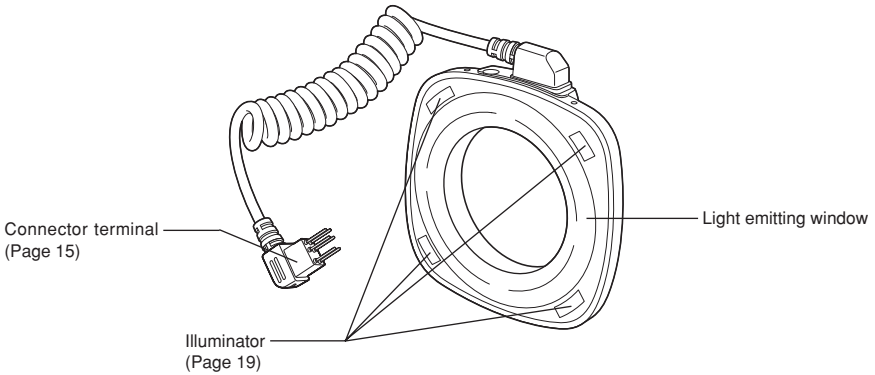


Control Panel Display

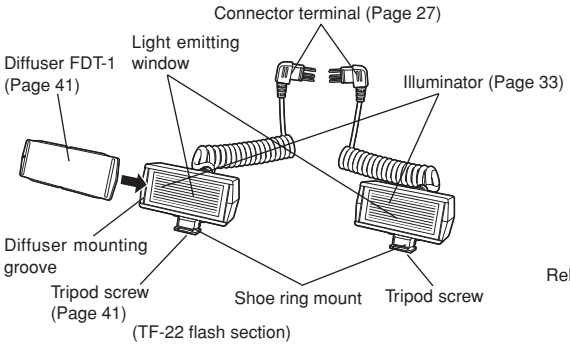


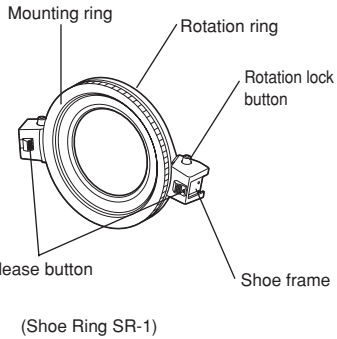
* For simplicity, this figure shows the panel with all indicators lit.

●Ring Flash RF-11



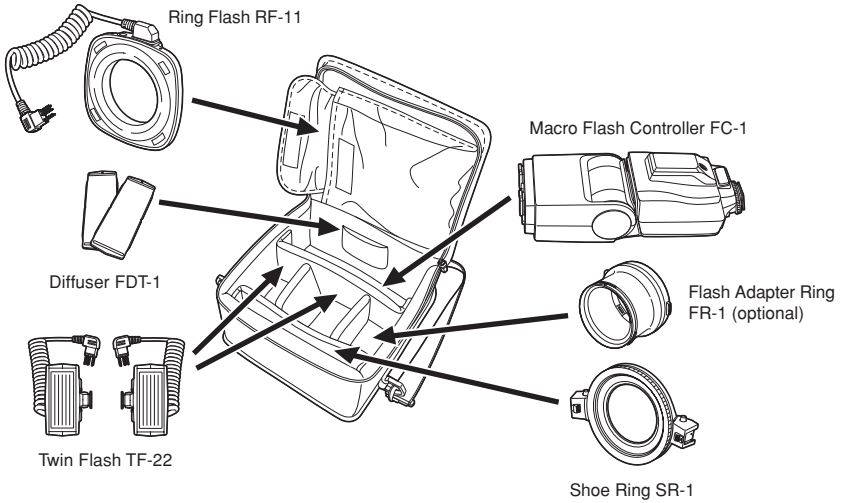
●Twin Flash TF-22





CASE FOR MACRO FLASH SYSTEM

The semi-hard case can accommodate all of the Macro Flash System components.



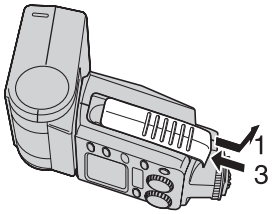
MACRO FLASH CONTROLLER FC-1

<Loading batteries>

Always use one of the following battery combinations

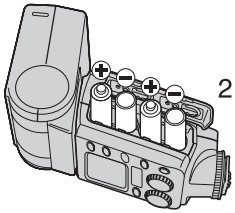
- AA (R6) alkaline dry cell batteries (LR6 type) ..... x 4
- AA (R6) Ni-Cd batteries ..... x 4
- AA (R6) Ni-Mh batteries ..... x 4
- AA (R6) Ni-Mn batteries (ZR6 type) ..... x 4
- AA (R6) lithium batteries (FR6 type) ..... x 4
- Lithium battery packs (CR-V3 type) (Olympus LB-01) ..... x 2

* AA (R6) manganese batteries cannot be used.

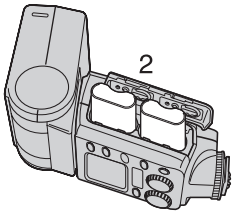


How to load the batteries

1. Open the battery compartment cover.
2. Insert the batteries with correct +/– polarity.
3. Close the battery compartment cover.



AA (R6) type batteries



CR-V3

The following product (optional) can also be used as an external power supply (page 49) :

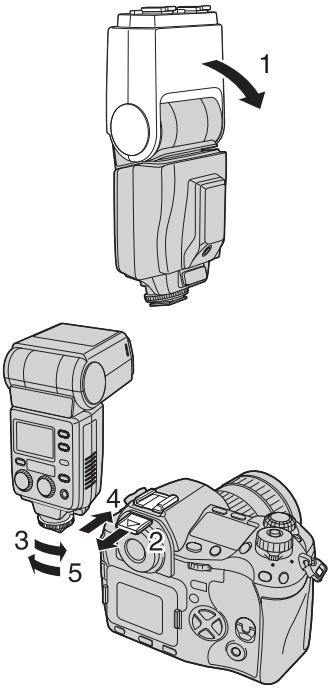
- Flash High-Voltage Set SHV-1

■Notes

- Do not mix old and new batteries or batteries of different types.
- Remove the batteries when the Macro Flash Controller is not going to be used for a long period.
- Carry spare batteries when traveling or when using the flash in cold areas.
- If the Power button of the FC-1 Macro Flash Controller is pressed when the RF-11 Ring Flash or TF-22 Twin Flash is not connected, the [RING] or [TWIN] indicator on the control panel blinks and the Macro Flash Controller turns off automatically (page 47).

<Attaching to the camera/Removing from the camera>

Confirm that both the camera and Macro Flash Controller are off.
Attaching or removing the Macro Flash Controller while either it or the camera is on may result in malfunction.

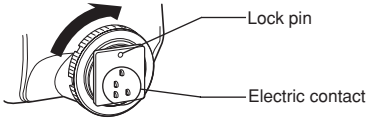


How to attach

1. Place the head section in the standard position (horizontal, front).

2. Remove the hot shoe cover from the camera.
   • Store the hot shoe cover in the pocket of the macro flash case to avoid losing it.

3. Loosen the lock ring.
   • If the lock pin is in the out position, put it to the in position by turning it all the way in the opposite direction to [←LOCK] until it stops.



   • Do not apply excessive force to the lock pin.
   • Do not touch the electric contact with a finger or metallic object.
   • Do not attach the Macro Flash Controller while the lock pin is in the out position. Otherwise, malfunction may result.

4. Slide the Macro Flash Controller all the way into the hot shoe until it clicks and stops.

5. Turn the lock ring all the way in the direction of [←LOCK] until it stops.

How to remove

1. Loosen the lock ring, then slide the Macro Flash Controller out of the hot shoe.

2. Attach the hot shoe cover to the camera.

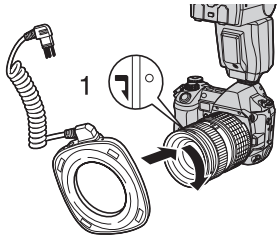
Attach the RF-11 Ring Flash or TF-22 Twin Flash to the Macro Flash Controller.

• How to use the RF-11 Ring Flash : See page 15.
• How to use the TF-22 Twin Flash : See page 27.

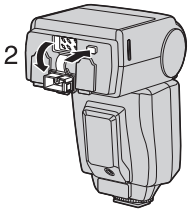
RING FLASH RF-11

<Attaching to the camera>

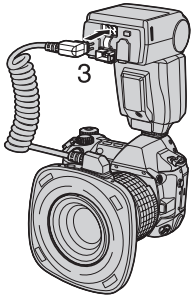
- Attach the FC-1 Macro Flash Controller to the camera beforehand.
- To prevent the Ring Flash from falling off, attach it with the camera in a stable position.



1. While aligning the indices, attach the RF-11 Ring Flash to the lens.



2. Press the Ring Flash release button of the FC-1 Macro Flash Controller to remove the cap.



3. IInsert the RF-11 Ring Flash connector terminal into the Ring Flash connector on the FC-1 Macro Flash Controller until it clicks.
   - When unplugging the connector, be sure to press and hold the Ring Flash release button. Be sure to attach the cap after unplugging the connector.
   - Do not pull the cord when plugging or unplugging the connector. Always grasp it by the connector plug. Pulling the cord could damage the connector wire.

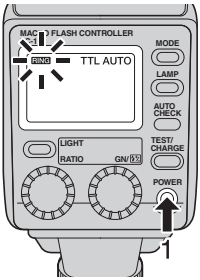
■Notes

- Confirm that both the Macro Flash Controller and Ring Flash are off before attaching or removing them. Otherwise, malfunction may result.
- Be sure to leave the Twin Flash connectors capped. Otherwise, the Macro Flash Controller cannot be turned on.

■Memo

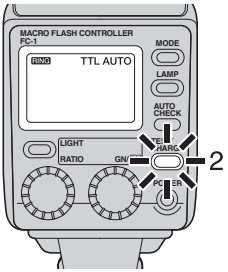
The Ring Flash and Twin Flash connector terminals are subject to high voltages. To ensure safety, the Macro Flash Controller is designed so that it cannot be turned on unless one of the flashes is connected to it and all of its unused connectors are capped.

<Checking the battery power>



1. Turn the camera on and then press the Power button to turn the Ring Flash on.
   - The [RING] indicator appears on the control panel and battery charging starts.

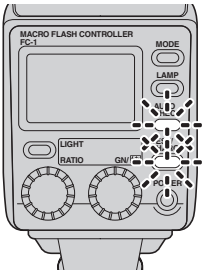
Notes:
- If the [RING] or [TWIN] indicator on the control panel blinks, wait until the blinking stops, then turn the camera off and re-connect the Ring Flash to the Ring Flash connector (page 47).
- Both Twin Flash connectors must be capped or the Ring Flash will not turn when the Power button is pressed.



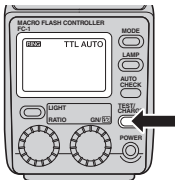
2. Ensure that the Charge lamp lights up.
   - Replace the batteries if the time taken for the Charge lamp to light up is longer than the values specified below.

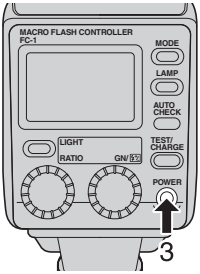
Alkaline, Ni-Mn, lithium or Ni-Cd batteries	30 sec.
Ni-Mh batteries	10 sec.

- If the Charge lamp and AUTO CHECK lamp blink alternately, it means that the battery capacity is running low. In this case, replace the batteries.



Memo: Test flash activation
To perform test flash activation, press the Test button.





3. Press the Power button again to turn the Ring Flash off.
Turn the Ring Flash off in the following cases:

- Before mounting it on the camera or dismounting it from the camera.
- When flash emission is not required.
- When not using the Ring Flash.
- When plugging or unplugging the Ring Flash connector.

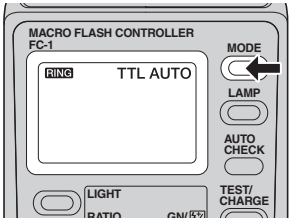
■Flash Interval and Flash Count

The following table shows the flash intervals and flash counts for various batteries. Data is based on using batteries all of the same type.

Batteries used	Flash interval	Flash count
AA (R6) alkaline dry cell batteries (LR6 type)	Approx. 4 sec.	Approx. 250 times
AA (R6) Ni-Cd batteries, 1000 mAh	Approx. 3 sec.	Approx. 170 times
AA (R6) Ni-Mh batteries, 1900 mAh	Approx. 3.5 sec.	Approx. 200 times
AA (R6) Ni-Mn batteries (ZR6 type)	Approx. 4 sec.	Approx. 160 times
AA (R6) lithium batteries (FR6 type)	Approx. 5 sec.	Approx. 190 times
Lithium battery packs (CR-V3)	Approx. 4 sec.	Approx. 420 times

* The flash emission interval and count data were obtained from in-house tests at Olympus.

<Selecting the control mode>



1. Press the Shutter button of the camera gently to start communication of shooting information including ISO speed, lens iris and shutter speed between the camera and Macro Flash System.
   - The selected flash control mode is shown on the control panel.
   - The mode is switched every time the MODE button is pressed.

Flash control mode	Control panel display	Control operation	Main applications
TTL AUTO	TTL AUTO	Flash is controlled automatically by performing pre-flash according to the camera setup.	Usually use this mode with a digital camera with communication capability.
MANUAL	MANUAL	Flash is performed at the manually set light intensity	Shooting using manual flash.

■Notes

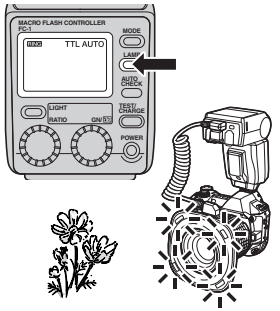
- Certain modes may be unavailable depending on the shooting mode set on the camera.
- It is not possible to select an unavailable mode.

<Using the illuminators>

The illuminators can be used as indicators for three different functions: modeling, AF, and red-eye reduction.

Modeling lamp function

This function makes it easy to confirm subject s in low light.



1. Press the Lamp button to light up the illuminators. The modeling function is activated.
   - The default setting for the illuminator lighting period is 30 seconds.
   - The lighting period can be set between 1 second and 3 minutes (page 46).
2. The illuminators turn off either when the camera shutter is released or the Lamp button is pressed again.

AF Illuminator function

With the Olympus Four Thirds System digital SLR camera, the AF illuminators can be turned on to facilitate focus adjustment when the subject is dark or lacks contrast.
This function can also be defeated in the Custom Setup operation (page 46).

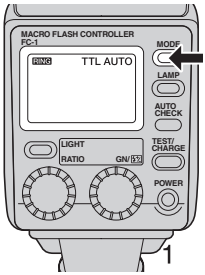
Red eye reduction lamp function

With the Olympus Four Thirds System digital SLR camera, the illuminators function as red-eye reduction lamps that light up for about 1 second to minimize red eyes caused by flash emission.

- It takes about 1 second from the time the illuminators light until the camera's shutter releases. Hold the camera firmly during this period to prevent image blur.
- The red eye reduction effect may become less obvious when the subject does not look at the flash directly from the front, the subject does not look at the pre-flash, the subject is located at a distance or due to individual properties of the subject.

<TTL AUTO>

In this mode, pre-flash is performed to measure the optimum flash light intensity and then the actual flash is emitted.

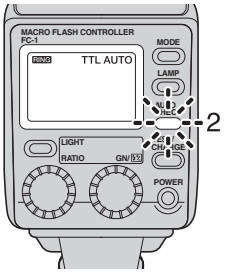


1. See the following table and set the lens iris (F) according to the lens in use.

Standard lens iris
Zuiko Digital lenses

ZUIKO DIGITAL ED50mm f2 Macro	F11
ZUIKO DIGITAL 14-54mm f2.8-3.5	
ZUIKO DIGITAL ED50-200mm f2.8-3.5	F8

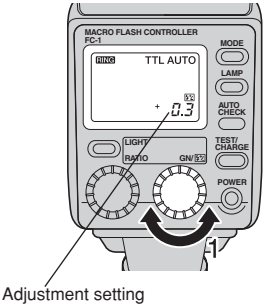
- Even if a different lens iris (F) Is used, optimum flash exposure is also available provided that it falls within the light control range of the flash in use.
- The flash's light control range varies according to the lens and shooting distance. See page 24 for details.



2. When flash activation has been performed correctly, the AUTO CHECK lamp blinks for about 5 seconds after the shutter is released. If the lamp does not blink, the exposure may be incorrect. In this case, you will need to adjust shooting settings such as the lens iris (F).

■Light intensity adjustment

The flash light intensity can be adjusted between +3 and –3.



The light intensity adjustment must be set to ON in the Custom Setup operation (page 46).

• The ⚡± indicator appears in the control panel.

1. Turn dial B to select a light intensity adjustment value in the following steps.
   (This selection is also possible with dial A.)

   0 → +0.3 → +0.7 → +1.0 ... +3.0
   0 → –0.3 → –0.7 → –1.0 ... –3.0

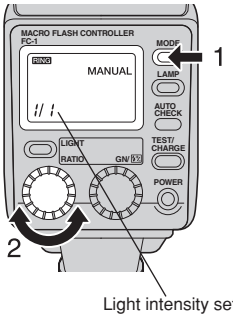
2. If the camera's flash adjustment mode is selected, the actual flash light intensity will be the sum of the light intensity adjustment value set on the Ring Flash and that set on the camera.
   The light intensity adjustment value displayed on the control panel applies to the Ring Flash only.

   [Example]

	Adjustment setting	Light intensity adjustment display on the control panel	Actual adjustment value
RF-11	+0.3	+0.3	+0.6
Camera	+0.3		

<MANUAL>

In this mode, the flash is emitted according to the light intensity setting.



1. The control panel shows the light intensity ratio.
   Light intensity ratio: Ratio of the current light intensity with respect to the full flash light intensity.
   * The light intensity ratio display can be changed to the guide number (GN) display in the Custom Setup operation (page 48).

2. Turn dial A to set the desired light intensity ratio.
   The available light intensity ratios are 1/1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128 and 1/256.

Guide numbers (GN) and light intensity ratio

Light intensity ratio	1/1	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256
GNm	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0	0.7
GNft	36	26	18	13	9.2	6.6	4.6	3.3	2.3

■How to determine the lens iris (F), light intensity or guide number (GN)

Since the distance to the subject is very short and the shooting magnification is very high in Macro shooting, the light intensity is lower than would normally be the case with the lens iris (F) setting. This is because the light intensity for the lens iris is based on a distance setting of infinity.

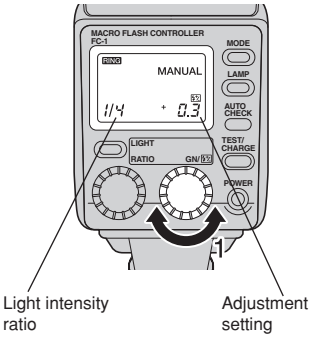
The F-number at this time Is referred to as the effective F-value, which is variable depending on the shooting magnification and lens type. In consequence, the above facto should be taken in consideration when determining the flash light intensity and lens iris in the MANUAL mode.

1. When using an Olympus Four Thirds System SLR camera:
   - Check the light control range of the lens used and set the combination of the lens iris (F) and light intensity ratio according to the shooting distance (page 24).
   - If optimum exposure cannot be obtained, take some test shots and adjust the lens iris, light intensity ratio and other conditions as required.

2. When using any other camera:
   - Take some test shots and set the lens iris (F) and light intensity ratio as required.

■Light intensity adjustment

The light intensity ratio (guide number) can be adjusted in 1/3-step increments.



The light intensity adjustment must be set to ON in the Custom Setup operation (page 46).

• The ⚡± indicator appears in the control panel.

1. Turn dial B to select a light intensity adjustment value in the following steps.
   0 → +0.3 → +0.7
   → Turning the dial further increases the light intensity ratio.
   0 → –0.3 → –0.7
   → Turning the dial further decreases the light intensity ratio.

2. Even if the camera's flash adjustment mode is selected, it will not be applied. Only the adjustment set on the Ring Flash is applied.

[Example]

	Adjustment setting	Light intensity adjustment display on the control panel	Actual adjustment value
RF-11	+0.3	+0.3	+0.3
Camera	+0.3		

< Light control range>

The following charts show the light control range of the RF-11 Ring Flash with each type of lens.

■How to read the chart

1. TTL AUTO

Flash at optimum exposure is available by setting the lens iris (F) in the range for each shooting distance shown in the following charts.

Range with ISO 100 Range with ISO 400

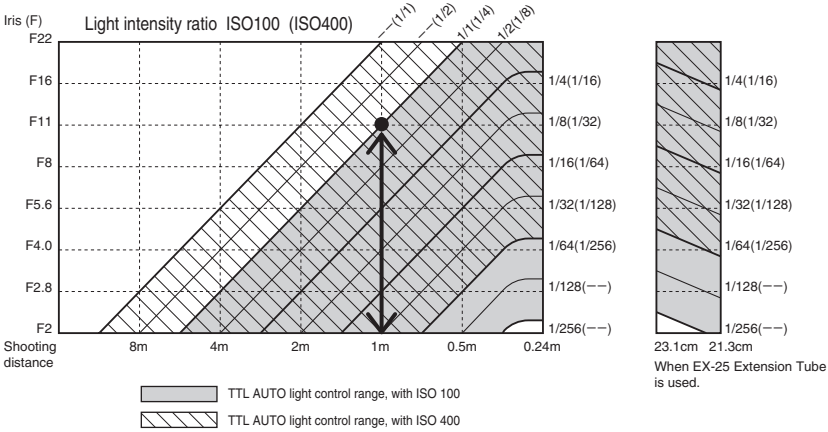
2. MANUAL

- Flash at optimum exposure can be obtained by setting the light intensity ratio and lens iris (F) combination for each shooting distance.

■Note

- Since the optimum exposure is variable depending on subject, lighting, distance, etc., it is recommended that you determine the optimum settings by taking some test shots based on the following charts.

●ZUIKO DIGITAL ED50mm f2 Macro

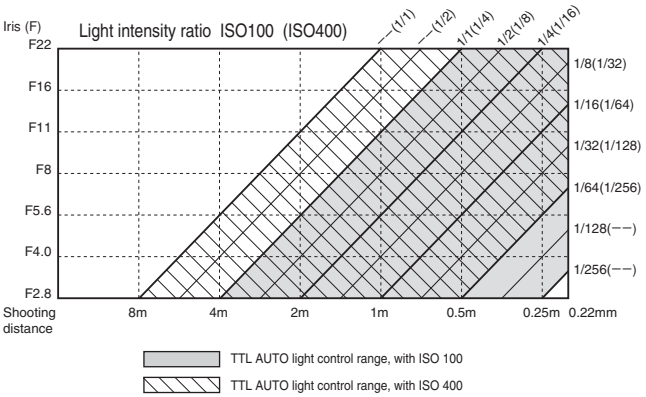


■How to see the chart (when the shooting distance is 1 m)

TTL AUTO With ISO 100, iris F2 to F11 (←→) is the range where optimum exposure is achieved.

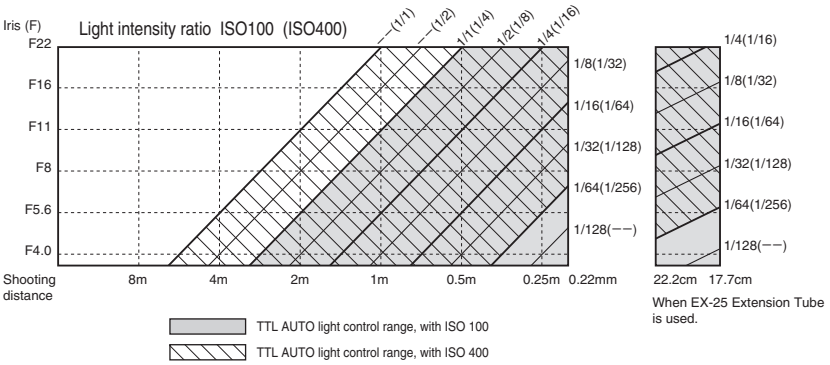
MANUAL With ISO 100, optimum exposure is achieved at iris F11 (●) when the light intensity ratio is 1/1.

●ZUIKO DIGITAL 14-54mm f2.8-3.5, At 14 mm



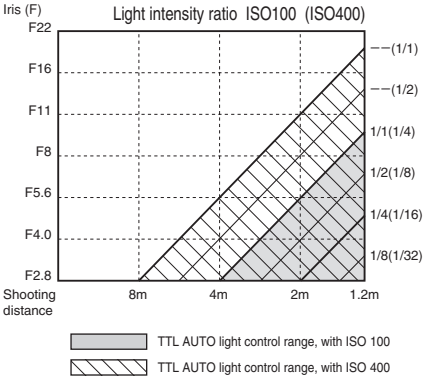
The EX-25 Extension Tube cannot be used.

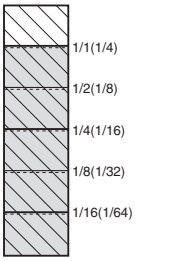
●ZUIKO DIGITAL 14-54mm f2.8-3.5, At 54 mm



When EX-25 Extension Tube is used.

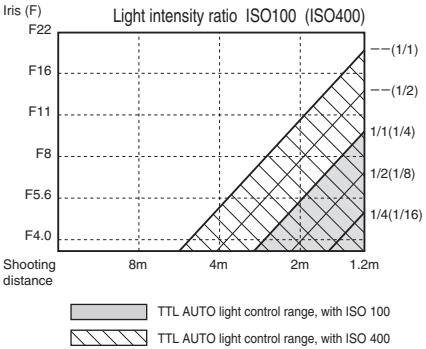
●ZUIKO DIGITAL ED50-200mm f2.8-3.5, At 50 mm

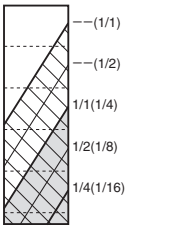




28cm～27.6cm
When EX-25 Extension Tube is used.

●ZUIKO DIGITAL ED50-200mm f2.8-3.5, At 200 mm



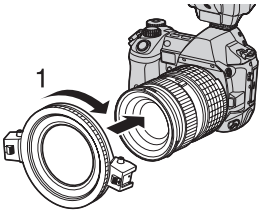


195.9cm 88.5cm
When EX-25 Extension Tube is used.

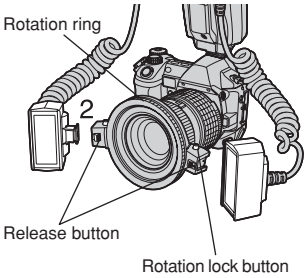
TWIN FLASH TF-22

<Attaching to the camera>

• Attach the FC-1 Macro Flash Controller to the camera beforehand.

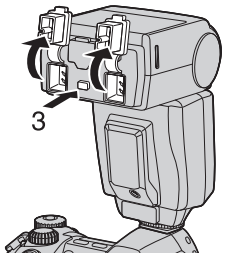


1. Attach the SR-1 Shoe Ring (provided) to the lens.

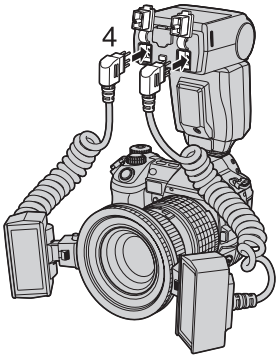


2. Attach the TF-22 Twin Flash to the shoe frame.
   - When removing the Twin Flash, press and hold the release button on the shoe frame.
   - To change the positioning of the light-emitting section, press and hold the rotation lock button while turn the shoe frame.

Memo: The position of the light-emitting section can also be changed by turning the rotary ring.



3. Press the FC-1 Macro Flash Controller's Twin release button to remove the cap.



4. Insert the TF-22 Twin Flash connector terminal into the Twin Flash connector on the FC-1 Macro Flash Controller until it clicks.
   - When unplugging the connectors, be sure to press and hold the Twin Flash release button. Be sure to attach the cap after unplugging the connectors.
   - Do not pull the cord when plugging or unplugging the connector. Always grasp it by the connector plug. Pulling the cord could damage the connector wire.

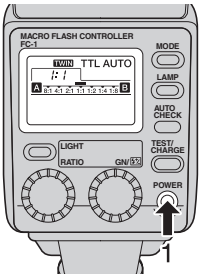
■Notes

- Confirm that both the Macro Flash Controller and Twin Flash are off before attaching and removal. Otherwise, malfunction may result.
- When using only one flash of the Twin Flash, be sure to cap the unused Twin Flash connector.
  Be sure to leave the Ring Flash connector capped. Otherwise, the Macro Flash Controller cannot be turned on.

■Memo

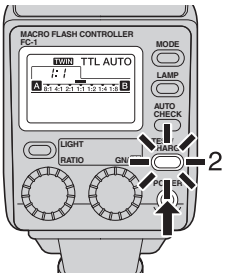
The Ring Flash and Twin Flash connector terminals are subject to high voltages. To ensure safety, the Macro Flash Controller is designed so that it cannot be turned on unless one of the flashes is connected to it and all of its unused connectors are capped.

<Checking the battery power>



1. Turn the camera on and then press the Power button to turn the Twin Flash on.
   - The [TWIN] indicator appears on the control panel and battery charging starts.

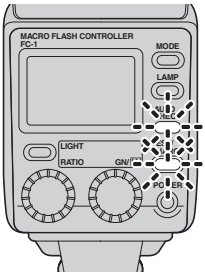
Notes:
- If the [RING] or [TWIN] indicator on the control panel blinks, wait until the blinking stops, then turn the camera off and re-connect the Ring Flash to the Ring Flash connector (page 47).
- If both the RF-11 Ring Flash and TF-22 Twin Flash are connected, the Twin Flash cannot be turned on by pressing its Power button. (The Ring Flash and Twin Flash cannot be connected simultaneously.)



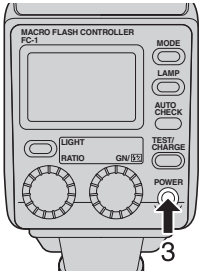
2. Ensure that the Charge lamp lights up.
   - Replace the batteries if the time taken for the Charge lamp to light up is longer than the values specified below.

Alkaline, Ni-Mn, lithium or Ni-Cd batteries	30 sec.
Ni-Mh batteries	10 sec.

   - If the Charge lamp and AUTO CHECK lamp blink alternately, it means that the battery capacity is running low. In this case, replace the batteries.



Memo: Test flash activation
To perform test flash activation, press the Test button.



3. Press the Power button again to turn the Twin Flash off.
Turn the Twin Flash off in the following cases:

- Before mounting it on the camera or dismounting it from the camera.
- When flash emission is not required.
- When not using the Twin Flash.
- When plugging or unplugging the Twin Flash connectors.

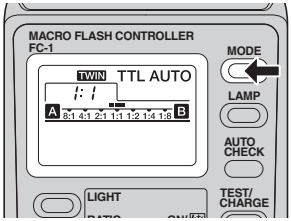
■Flash Interval and Flash Count

The following table shows the flash intervals and flash counts for various batteries. Data is based on using batteries all of the same type.

Batteries used	Flash interval	Flash count
AA (R6) alkaline dry cell batteries (LR6 type)	Approx. 4 sec.	Approx. 250 times
AA (R6) Ni-Cd batteries, 1000 mAh	Approx. 3 sec.	Approx. 170 times
AA (R6) Ni-Mh batteries, 1900 mAh	Approx. 3.5 sec.	Approx. 200 times
AA (R6) Ni-Mn batteries (ZR6 type)	Approx. 4 sec.	Approx. 160 times
AA (R6) lithium batteries (FR6 type)	Approx. 5 sec.	Approx. 190 times
Lithium battery packs (CR-V3)	Approx. 4 sec.	Approx. 420 times

* The flash emission interval and count data were obtained from in-house tests at Olympus.

<Selecting the control mode>



1. Press the Shutter button of the camera gently to start communication of shooting information including ISO speed, lens iris and shutter speed between the camera and Macro Flash System.
   - The selected flash control mode is shown on the control panel.
   - The mode is switched every time the MODE button is pressed.

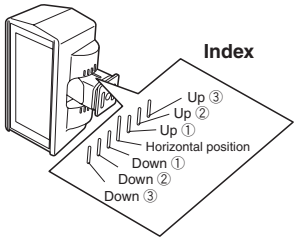
Flash control mode	Control panel display	Control operation	Main applications
TTL AUTO	TTL AUTO	Flash is controlled automatically by performing pre-flash according to the camera setup.	Usually use this mode with a digital camera with communication capability.
MANUAL	MANUAL	Flash is performed at the manually set light intensity	Shooting using manual flash.

■Notes

- Certain modes may be unavailable depending on the shooting mode set on the camera.
- The [TTL AUTO] mode may be unavailable with some cameras, including cameras with no communication capability.
- It is not possible to select an unavailable mode.

■Angle of light emitting section

• Adjustment at the following angles is possible in the up-down direction.

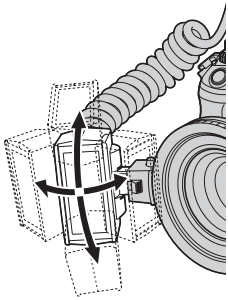


Index position	Angle from the horizontal position
Up ③	68°
Up ②	45°
Up ①	20°
Horizontal position	0°
Down ①	15°
Down ②	30°
Down ③	45°

• The left-right rotation angle can be adjusted at 45° intervals.

■Recommended angles: Angles in which light is illuminated on the subject effectively

Left-right rotation angle, from front



Shooting distance*	Angle
0.2 m	30° downward (Down ② index position)
0.3 m	15° downward (Down ① index position)
0.4 m	0°
0.5 m	0°
0.7 m	20°upward (Up ① index position)
1.0 m	20°upward (Up ① index position)

* Distance between the CCD position (marked ⊖ on the camera body when you are using the E-1) and the subject.

• If the system is mounted on the shoe frame, the light emitting section faces the shooting direction when it set at an upward angle of 20° (Up ① index position).
• Shadows are cast differently and the three-dimensional effect varies depending on the angle. Also, the effect differs according to the lens used. Set the firing angle according to your shooting objective.
• The intensity of the light directed at the subject varies according to the angle.

TTL AUTO Flash is fired at optimum exposure, but the light adjustment range varies depending on the angle.

MANUAL Set the flash ratio after taking some test shots.

■Note

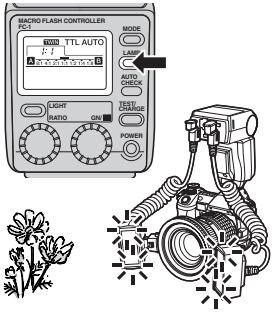
Pointing the light emitting section at the lens causes flares and ghosts.

<Using the illuminators>

The illuminators can be used as indicators for three different functions: modeling, AF, and red-eye reduction.

Modeling lamp function

This function makes it easy to confirm subject s in low light.



1. Press the Lamp button to light up the illuminators. The modeling function is activated.
   - The default setting for the illuminator lighting period is 30 seconds.
   - The lighting period can be set between 1 second and 3 minutes (page 46).
2. The illuminators turn off either when the camera shutter is released or the Lamp button is pressed again.

AF Illuminator function

With the Olympus Four Thirds System digital SLR camera, the AF illuminators can be turned on to facilitate focus adjustment when the subject is dark or lacks contrast.
This function can also be defeated in the Custom Setup operation (page 46).

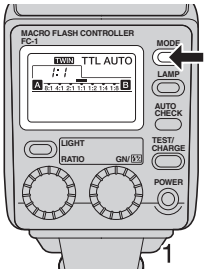
Red eye reduction lamp function

With the Olympus Four Thirds System digital SLR camera, the illuminators function as red-eye reduction lamps that light up for about 1 second to minimize red eyes caused by flash emission.

- It takes about 1 second from the time the illuminators light until the camera's shutter releases. Hold the camera firmly during this period to prevent image blur.
- The red eye reduction effect may become less obvious when the subject does not look at the flash directly from the front, the subject does not look at the pre-flash, the subject is located at a distance or due to individual properties of the subject.

<TTL AUTO>

In this mode, pre-flash is performed to measure the optimum flash light intensity and then the actual flash is emitted.

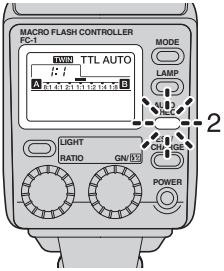


1. See the following table and set the lens iris (F) according to the lens in use.

Standard lens iris
Zuiko Digital lenses

ZUIKO DIGITAL ED50mm f2 Macro	F11
ZUIKO DIGITAL 11-22mm f2.8-3.5	
ZUIKO DIGITAL 14-54mm f2.8-3.5	
ZUIKO DIGITAL ED50-200mm f2.8-3.5	

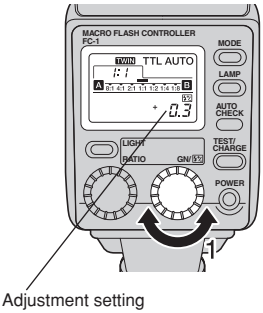
- Even if a different lens iris (F) is used, flash at optimum exposure is also available provided that it falls within the light control range of the flash.
- Even if a different lens iris (F) Is used, optimum flash exposure is also available provided that it falls within the light control range of the flash in use.
- The flash's light control range varies according to the lens and shooting distance. See page 42 for details.



2. When flash activation has been performed correctly, the AUTO CHECK lamp blinks for about 5 seconds after the shutter is released. If the lamp does not blink, the exposure may be incorrect. In this case, you will need to adjust shooting settings such as the lens iris (F).

■Light intensity adjustment

The flash light intensity can be adjusted between +3 and –3.



The light intensity adjustment must be set to ON in the Custom Setup operation (page 46).

• The ⚡ indicator appears in the control panel.

1. Turn dial B to select a light intensity adjustment value in the following steps.
   (This selection is also possible with dial A.)

   0 → +0.3 → +0.7 → +1.0 ... +3.0
   0 → –0.3 → –0.7 → –1.0 ... –3.0

2. The light intensity adjustment value is displayed only when the value is other than 0.

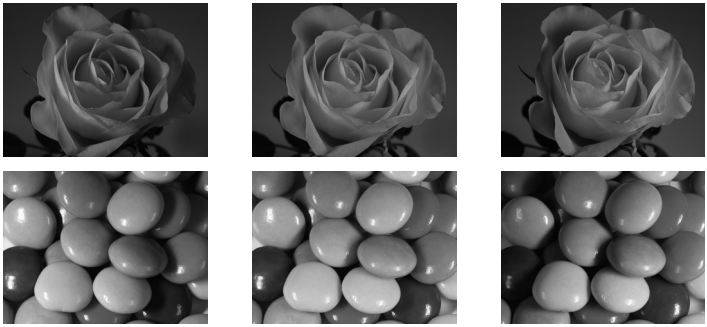
3. If the camera's flash adjustment mode is selected, the actual flash light intensity will be the sum of the light intensity adjustment value set on the Twin Flash and that set on the camera.
   The light intensity adjustment value displayed on the control panel applies to the Twin Flash only.

   [Example]

	Adjustment setting	Light intensity adjustment display on the control panel	Actual adjustment value
TF-22	+0.3	+0.3	+0.6
Camera	+0.3		

■Twin Flash light ratio setting

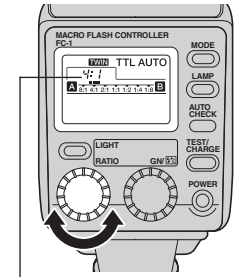
When using both flashes (A and B), you can adjust the ratio between their light intensities as required. This makes it possible to create a three-dimensional effect by applying various degrees of shading to the subject as shown below.



Light ratio 8 : 1 1 : 1 1 : 8

When dial A is turned, the Twin Flash A / B light ratio is displayed on the control panel. The Twin Flash light ratio is ready for adjustment.

- The control panel display shows both the light intensity ratio and bar graph simultaneously.
- The setting can be varied in steps of 1/3.



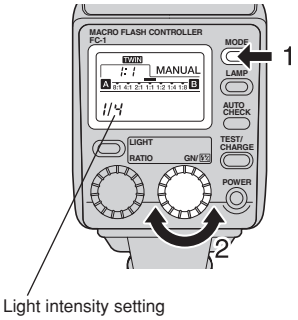
Twin Flash light ratio

Light ratio	Control panel display	
A	A	Only flash A fires. Flash B does not fire.
8 : 1	8:1 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 8:1 (Equivalent to +3 steps when converted to exposure value)
4 : 1	4:1 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 4:1 (Equivalent to +2 steps when converted to exposure value)
2 : 1	2:1 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 2:1 (Equivalent to +1 steps when converted to exposure value)
1 : 1	1:1 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Both flash A and flash B emit light at the same intensity.
1 : 2	1:2 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:2 (Equivalent to –1 steps when converted to exposure value)
1 : 4	1:4 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:4 (Equivalent to –2 steps when converted to exposure value)
1 : 8	1:8 A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:8 (Equivalent to –3 steps when converted to exposure value)
B	B	Only flash B fires. Flash A does not fire.

■Note

In situations where optimum exposure cannot be obtained with the selected light ratio value, the system may automatically change the value before flash emission.

In this mode, the flash is emitted according to the light intensity setting.



1. The control panel shows the light intensity ratio.
   When both of the two flashes are used, their combined light intensity is displayed.
   Light intensity ratio: Ratio of the current light intensity with respect to the full flash light intensity.
   * The light intensity ratio display can be changed to the guide number (GN). display in the Custom Setup operation (page 98).

2. Turn dial A to set the desired light intensity ratio.
   The available light intensity ratios are 1/1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128, 1/256 and 1/512.
   • The amount of illumination from the Twin Flash that is applied to the subject varies depending on such conditions as whether one flash unit is used or two flash units are used, angle adjustment and light ratio. Set the appropriate iris (F) or light intensity ratio by referring to the guide number charts.

When using two flashes (Combined guide number)

Light intensity ratio	1/1	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512
GNm	22	16	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0
GNft	72	52	36	26	18	13	9.2	6.6	4.6	3.3

When using only one flash

Light intensity ratio	1/1	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512
GNm	16	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0	0.7
GNft	52	36	26	18	13	9.2	6.6	4.6	3.3	2.3

■How to determine the lens iris (F), light intensity or guide number (GN)

Since the distance to the subject is very short and the shooting magnification is very high in Macro shooting, the light intensity is lower than would normally be the case with the lens iris (F) setting. This is because the light intensity for the lens iris is based on a distance setting of infinity.

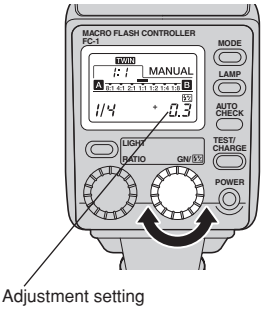
The F-number at this time is referred to as the effective F-value, which is variable depending on the shooting magnification and lens type. In consequence, the above factor should be taken in consideration when determining the flash light intensity and lens iris in the MANUAL mode.

1. When using an Olympus Four Thirds System SLR camera:
   - Check the TF-22 Twin Flash light control range diagram for each lens on page 42, and set the combination of the lens iris (F) and light intensity ratio according to the shooting distance.
   - If optimum exposure cannot be obtained, take some test shots and adjust the lens iris, light intensity ratio and other conditions as required.

2. When using any other camera:
   - Take some test shots and set the lens iris (F) and light intensity ratio as required.

■Light intensity adjustment

The light intensity ratio (guide number) can be adjusted in 1/3-step increments.



The light intensity adjustment must be set to ON in the Custom Setup operation (page 46).

• The indicator appears in the control panel.

1. Turn dial B to select a light intensity adjustment value in the following steps.

   0 → +0.3 → +0.7

   → Turning the dial further increases the light intensity ratio.

   0 → –0.3 → –0.7

   → Turning the dial further decreases the light intensity ratio.

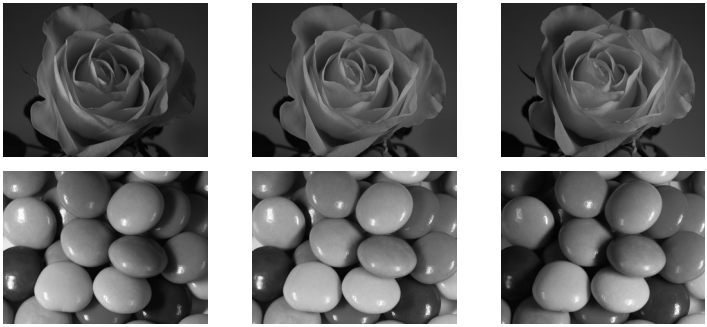
2. Even if the camera's flash adjustment mode is selected, it will not be applied. Only the adjustment set on the Ring Flash is applied.

[Example]

	Adjustment setting	Light intensity adjustment display on the control panel	Actual adjustment value
TF-22	+0.3	+0.3	+0.3
Camera	+0.3		

■Twin Flash light ratio setting

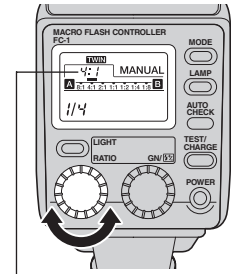
When using both flashes (A and B), you can adjust the ratio between their light intensities as required. This makes it possible to create a three-dimensional effect by applying various degrees of shading to the subject as shown below.



Light ratio 8 : 1 1 : 1 1 : 8

When dial A is turned, the Twin Flash A / B light ratio is displayed on the control panel. The Twin Flash light ratio is ready for adjustment.

- The control panel display shows both the light intensity ratio and bar graph simultaneously.
- The setting can be varied in steps of 1/3.



Twin Flash light ratio

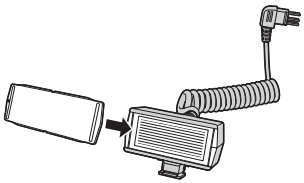
Light ratio	Control panel display	
A	A	Only flash A fires. Flash B does not fire.
8 : 1	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 8:1 (Equivalent to +3 steps when converted to exposure value)
4 : 1	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 4:1 (Equivalent to +2 steps when converted to exposure value)
2 : 1	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 2:1 (Equivalent to +1 steps when converted to exposure value)
1 : 1	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Both flash A and flash B emit light at the same intensity.
1 : 2	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:2 (Equivalent to –1 steps when converted to exposure value)
1 : 4	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:4 (Equivalent to –2 steps when converted to exposure value)
1 : 8	A 8:1 4:1 2:1 1:1 1:2 1:4 1:8 B	Light ratio 1:8 (Equivalent to –3 steps when converted to exposure value)
B	B	Only flash B fires. Flash A does not fire.

■Note

If the selected Twin Flash light ratio is too low for the selected light intensity ratio (guide number), the Twin Flash light ratio display blinks. If this happens, change the Twin Flash ratio or light intensity ratio (guide number) (page 46).

<Using the diffuser FDT-1>

The diffuser enables shooting under soft lighting by attenuating the shades on the subject. Another way that shooting options are increased is the ability to use the wide-open iris (F).



1. Insert the diffuser into the diffuser mounting grooves of the Twin Flash.
   • Since the use of the diffuser reduces light intensity by about 2 steps, the guide numbers (GN) change as shown in the following tables.

■TTL AUTO

• Flash at optimum exposure is possible, but the light control range is reduced due to decrease in the guide number (GN).

■MANUAL

• Refer to the following tables when setting the lens iris (F).

When using two flashes (Combined guide number)

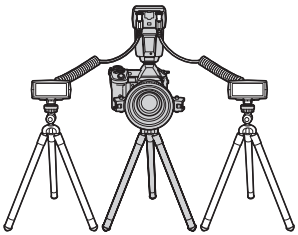
Light intensity ratio		1/1	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512
GNm	Without diffuser	22	16	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0
	With diffuser	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0	0.7	0.5
GNft	Without diffuser	72	52	36	26	18	13	9.2	6.6	4.6	3.3
	With diffuser	36	26	18	13	9.2	6.6	4.6	3.3	2.3	1.7

When using only one flash

Light intensity ratio		1/1	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512
GNm	Without diffuser	16	11	8.0	5.6	4.0	2.8	2.0	1.4	1.0	0.7
	With diffuser	8.0	5.6	4.0	2.8	2.0	1.4	1.0	0.7	0.5	0.4
GNft	Without diffuser	52	36	26	18	13	9.2	6.6	4.6	3.3	2.3
	With diffuser	26	18	13	9.2	6.6	4.6	3.3	2.3	1.7	1.2

<Other operations>

■The tripod screw of the Twin Flash can be used as follows.



• TTL AUTO
Flash at optimum exposure is available but the light control range varies depending on the shooting conditions.
• MANUAL
Set the lens iris (F) by performing test flash activation.

< Light control range>

The following figures show the light control range of the TF-22 Twin Flash with each type of lens. The figures assume that both flashes are used at the recommended angle (page 32).

1. TTL AUTO

Flash at optimum exposure is available by setting the lens iris (F) in the range for each shooting distance shown in the following charts.

Range with ISO 100 Range with ISO 400

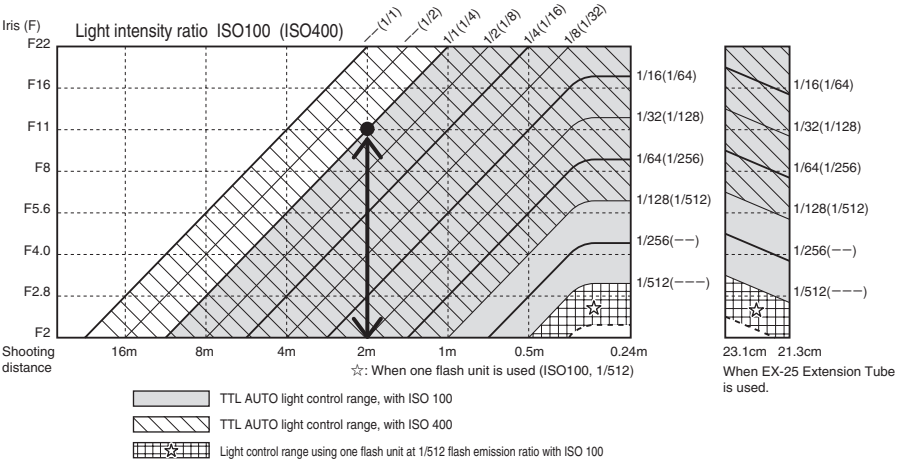
2. MANUAL

- Flash at optimum exposure can be obtained by setting the light intensity ratio and lens iris (F) combination for each shooting distance.

■Note

- Since the optimum exposure is variable depending on subject, lighting, distance, etc., it is recommended that you determine the optimum settings by taking some test shots based on the following charts.

●ZUIKO DIGITAL ED50mm f2 Macro

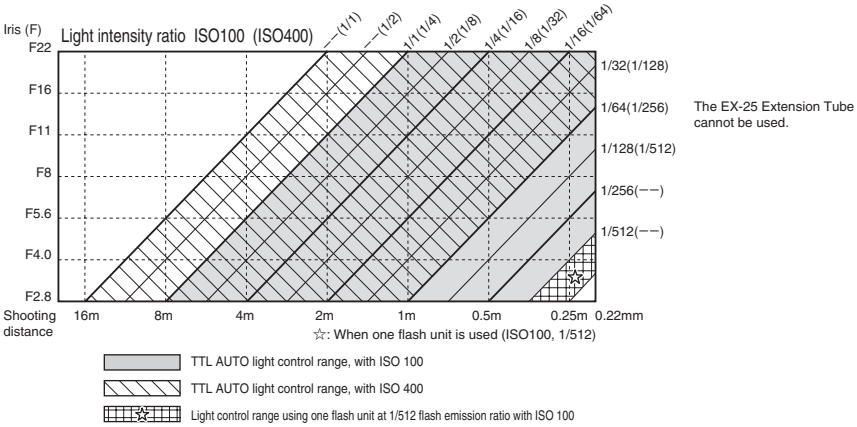


■How to see the chart (when the shooting distance is 2 m)

TTL AUTO With ISO 100, iris F2 to F11 (←→) is the range where optimum exposure is achieved.

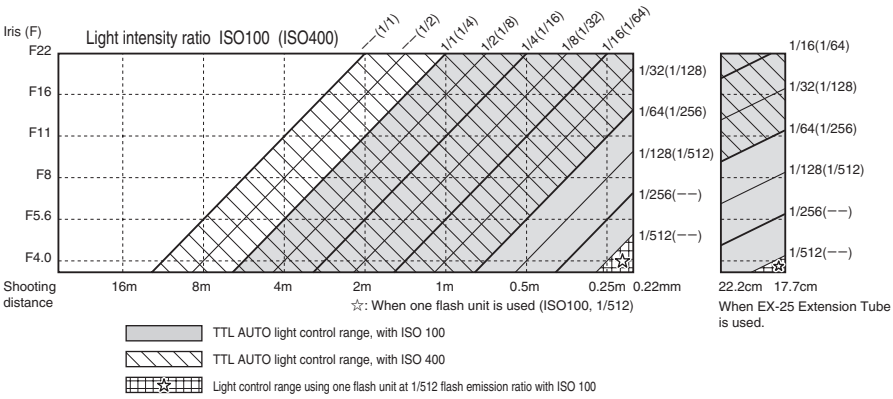
MANUAL With ISO 100, optimum exposure is achieved at iris F11 (●) when the light intensity ratio is 1/1.

●ZUIKO DIGITAL 14-54mm f2.8-3.5, At 14 mm



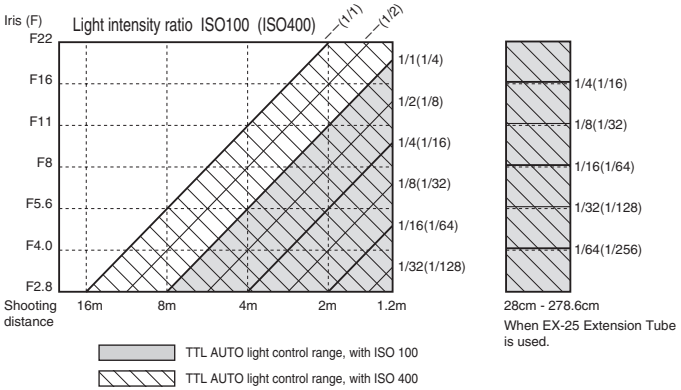
The EX-25 Extension Tube cannot be used.

●ZUIKO DIGITAL 14-54mm f2.8-3.5, At 54 mm

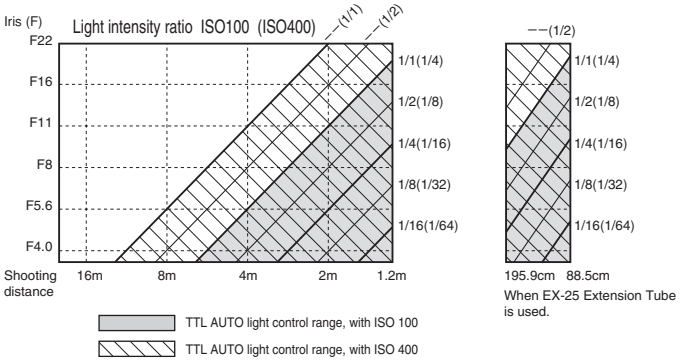


When EX-25 Extension Tube is used.

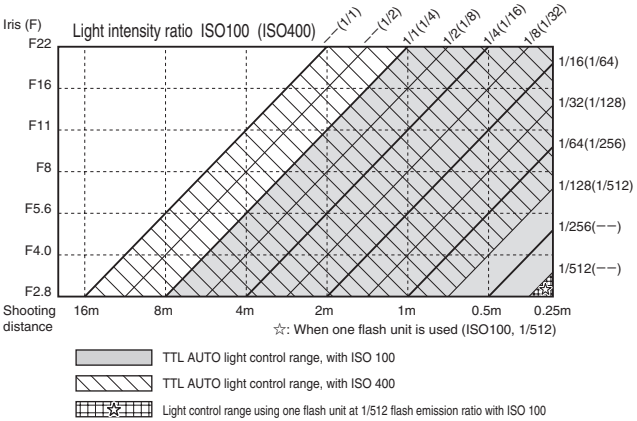
●ZUIKO DIGITAL ED50-200mm f2.8-3.5, At 50 mm



●ZUIKO DIGITAL ED50-200mm f2.8-3.5, At 200 mm

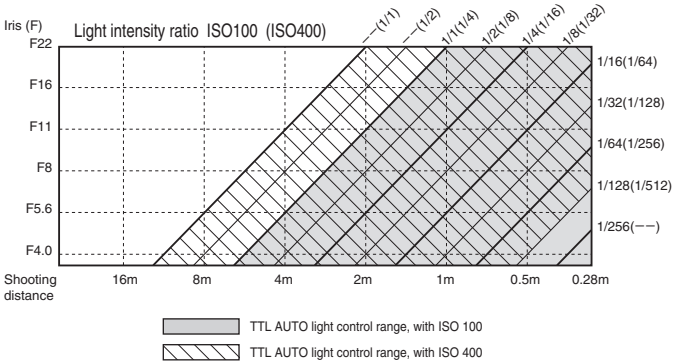


●ZUIKO DIGITAL 11-22mm f2.8-3.5, At 11 mm



The EX-25 Extension Tube cannot be used.

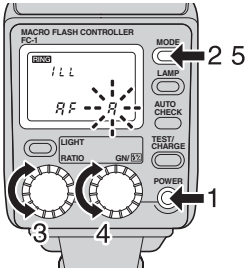
●ZUIKO DIGITAL 11-22mm f2.8-3.5, At 22 mm



The EX-25 Extension Tube cannot be used.

CUSTOM SETUP

Custom setup allows each user to customize flash setup to suit his or her preferences.



Setup procedure

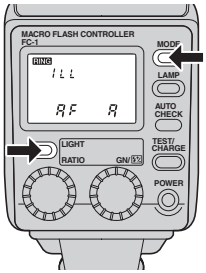
1. Turn the Macro Flash Controller on.
2. Press and hold the MODE button for more than 2 seconds, until the setup mode display appears in the control panel.
3. Turn dial A to select the setup mode.
4. Turn dial B to select the value.
5. Press the MODE button to exit from setup and return to the previous control panel display.

Setup mode	Mode display Dial A	Value display Dial B	Function	Default
AF illuminator lamp	ILL AF	A	AF illuminator is activated according to the control from the camera.	A
		OFF	AF illuminator is defeated.	
LAMP timer	ILL LAP	1"~60" --	The lighting time of the modeling lamp can be set. Selectable time: 1" (1 sec.) ~ 10", 15", 20", 25", 30", 40", 50", 60" and – –" (3 min.)	30"
Light intensity adjustment	⚡±	OFF	Light intensity cannot be adjusted.	OFF
		on	Light intensity can be adjusted.	
Guide number display	GN	OFF	The light intensity in MANUAL mode is displayed in terms of light intensity ratio.	OFF
		on	The light intensity in MANUAL mode is displayed in terms of guide number.	
Guide number Unit of distance	m ft	m	Guide numbers are displayed in meters.	m
		ft	Guide numbers are displayed in feet.	

• Custom setup can be performed separately for the Ring Flash (RING) and Twin Flash (TWIN).

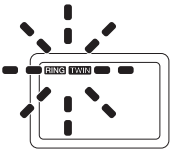
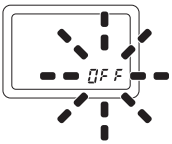
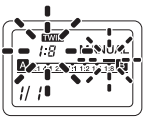
ALL RESET

All Reset resets the custom setups to the factory default settings.



- Press the MODE and LIGHT buttons simultaneously for 2 or more seconds to reset the custom setups (except for the distance display unit (m/ft)) to the default settings.
- The distance display unit (m/ft) is not altered by the all reset operation.
- Restore the Ring Flash (RING) and Twin Flash (TWIN) modes respectively.

WARNING DISPLAY LIST

Warning details	Control panel display	Remedy
The Ring Flash or Twin Flash is not connected.		• The display disappears automatically in about 4 seconds. When the display has disappeared, connect the Ring Flash or Twin Flash.
Connection failure during or connector disconnection during power ON.		• The display disappears automatically in about 4 seconds. • When the display has disappeared, re-connect the Ring Flash or Twin Flash.
The Twin Flash light ratio is improper. • Flash emission with the selected light ratio is not possible in Manual mode.		• Set the proper Twin Flash light ratio or light intensity ratio.

CONTINUOUS FIRING

Continuous firing makes the light-emitting section hot and may cause it to deteriorate or malfunction. Therefore, continuous firing should be limited to the counts shown in the following tables. Do not use the Macro Flash System for at least 10 minutes after continuous firing up to the limit count.

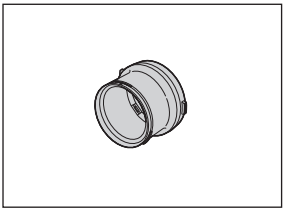
■Limit counts of continuous firings

	Limit count
Ring Flash RF-11	40 times

	Limit count
Twin Flash TF-22	40 times

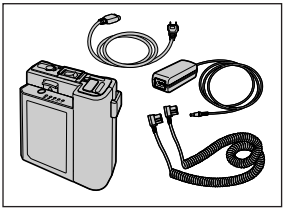
OPTIONAL ACCESSORIES

●Shoe adapter ring



• Flash Adapter Ring FR-1
Mounting adapter for use with a Zuiko Digital ED50mmf2.0Macro lens for Olympus Four Thirds System digital cameras.

●External power supplies



• Flash High Voltage Set SHV-1
(Includes the HV-1 High Voltage Pack, BN-1 Ni-Mh Battery Pack and AC-2 AC Adapter.)
The included BN-1 Ni-Mh battery pack makes it possible to charge the flash faster and increase the available flash emission count.

Batteries used in FC-1	Battery used in HV-1	Flash interval	Flash count
AA (R6) alkaline batteries	BN-1	Approx. 1 sec.	Approx. 750 times
	None	Approx. 1.2 sec.	Approx. 420 times

• Flash emission interval and count data obtained from in-house tests at Olympus.

■Note

Up to 40 successive full flashes are permitted. To allow the light-emitting surface to cool, the flash should not be used for at least 10 minutes after 10 flashes have been fired. See page 48 for details.

Q&A

Q The FC-1 cannot be turned on.
A It cannot be turned on in the following cases.
- When the connector(s) for the unused flash (either the Ring Flash or Twin Flash) is not capped.
- When both the Ring Flash and Twin Flash are connected.

Q Is multi-flash shooting possible in the TTL AUTO mode?
A No, it is not possible.

Q Why does the flash get hot after successive firing?
A The batteries generate heat when flash firing is repeated successively. In this case, use the flash at intervals until the light-emitting section and batteries cool down.

Q Why can't I mount the FC-1 on the camera?
A It cannot be mounted if the lock pin is in the out position. If this is the case, turn the lock ring all the way in the opposite direction to [fl LOCK] until it stops. Once the lock pin is in the in position, you can mount the FC-1 on the camera (page 14).

Q Why doesn't the control mode change when I press the MODE button?
A When the Macro Flash System is connected to certain types of communication-capable camera, the flash control mode may only be controlled from the camera.

Q What is the recommended white balance setting for the camera when using the flash?
A The auto white balance mode is recommended. If you use the manual white balance mode, set the color temperature to 5500K. Note that the color temperature varies depending on the flash shooting conditions.

Q When the Olympus E-1 Four Thirds System digital camera enters the sleep mode, the FC-1's control panel display turns off. Is this normal?
A Yes, it is normal. When the E-1 enters the sleep mode, so does the FC-1. When the camera wakes up, so does the FC-1.

Q Does the FC-1 also turn off when the Olympus E-1 digital camera is turned off?
A When the Olympus E-1 Four Thirds System digital camera is turned off, the FC-1 enters the sleep mode. When the E-1 is turned on again, the FC-1 also turns on. When you want to turn off the FC-1, turn off the FC-1 before turning off the E-1. In addition, when connected to a camera without communication capability, the FC-1 enters the sleep mode if it is not operated for about 60 minutes.

MAIN SPECIFICATIONS

●Macro Flash Controller FC-1

Model Number	: FS-FC1
Type	: External flash controller for digital still camera
Light-emitting device	: Ring Flash RF-11 or Twin Flash TF-22, exchangeable.
Auto power OFF	: Interlocks with the auto power OFF operation of a camera with communication capability.
Illuminator	: Automatic firing at low intensity, possible only when a camera with communication capability is connected.
Standard effective distance	: 0.2 to 3 m (0.7 to 9.9 ft) (Variable depending on the camera and lens in use.)
Power supply	: AA (R6) alkaline dry cell batteries (LR6) x 4, AA (R6) Ni-Cd batteries x 4, AA (R6) Ni-Mh batteries x 4, AA (R6) Ni-Mn batteries (ZR6) x 4, AA (R6) lithium batteries (FR6) x 4 or 3 V lithium battery pack (Olympus LB-01) x 2
External power supply	: Flash High Voltage Set SHV-1 (optional)
Dimensions	: 78(W) x 141(H) x 119(D) mm (3.1 x 5.6 x 4.7 in.) (excluding protrusions)
Weight	: 320 g (11.3 oz) (excluding batteries)
Operating environment	: Temperature: 0 to 40°C (32 to 104°F). Humidity: No more than 80% (without condensation).

●Ring Flash RF-11

Model Number	: FS-RF11
Type	: External flash for digital still camera
Guide numbers	: TTL AUTO : 11 MANUAL : 0.7 to 11
Firing angle	: 80°
Flash emission period	: Approx. 1/560 sec.
Flash emission count	: Approx. 250 times (using the LR6-type AA (R6) alkaline dry cell batteries) or approx. 420 times (using the LB-01 lithium battery packs). (Variable depending on shooting conditions)
Recharge time (From full flash activation to lighting of Charge lamp)	: Approx. 4 seconds (using the AA (R6) alkaline manganese batteries) or approx. 4 seconds times (using the LB-01 lithium battery packs).
Flash modes	: TTL AUTO and MANUAL
Illuminator	: 4 lamps built in.
Lens mount	: Bayonet
Cable length	: Approx. 100 mm (3.9 in)
Dimensions	: 120(W) x 135.5(H) x 24(D) mm (4.7 x 5.3 x 0.9 in.) (excluding cable)
Weight	: 145 g (5.1 oz)
Operating environment	: Temperature: 0 to 40°C (32 to 104°F).
Humidity	: No more than 80% (without condensation).

●Twin Flash TF-22

Model Number	: FS-TF22
Type	: External flash for digital still camera
Guide numbers	: Full flash activation: 22 (using 2 flashes) or 16 (using 1 flash). Minimum flash activation : 1.0 (using 2 flashes) or 0.7 (using 1 flash). MANUAL flash activation : 1.0 to 22 (using 2 flashes) or 0.7 to 16 (using 1 flash).
Firing angle	: Using 1 flash: Up-down 50°, left-right 55°
Flash emission period	: Approx. 1/1250 sec.
Flash emission count	: Approx. 250 times (using the LR6-type AA (R6) alkaline dry cell batteries) or approx. 420 times (using the LB-01 lithium battery packs). (Variable depending on shooting conditions)
Recharge time (From full flash activation to lighting of Charge lamp)	: Approx. 4 seconds (using the AA (R6) alkaline manganese batteries) or approx. 4 seconds (using the LB-01 lithium battery packs).
Flash modes	: TTL AUTO and MANUAL
Illuminator	: 4 lamps built in per flash.
Lens mount	: Shoe Ring SR-1 (provided, filter thread diameter 67 mm / 72 mm)
Cable length	: Approx. 100 mm (3.9 in)
<Light emitting section>	
Dimensions	: 73 (W) x 50 (H) x 39 (D) mm (2.9 x 2.0 x 1.5 in) (using 1 flash, excluding cable)
Weight	: 105 g (3.7 oz) (using 1 flash)
<Shoe Ring SR-1>	
Dimensions	: 146.5 (W) x 100 (H) x 22.5 (D) mm (5.8 x 3.9 x 0.9 in)
Weight	: 95 g (3.4 oz)
Operating environment	: Temperature: 0 to 40°C (32 to 104°F).
Humidity	: No more than 80% (without condensation).

Specifications are subject to change without any notice or obligation on the part of the manufacturer.

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